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3 **Claims**

4 We claim:

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6 1. A foundry binder system, which will cure in the presence of sulfur dioxide and a  
7 free radical initiator, comprising:

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9 (a) 20 to 70 parts by weight of an epoxy resin;

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11 (b) 1 to 50 parts by weight of an acrylate;

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13 (c) 1 to 30 parts of an alkyl ester of a fatty acid wherein the alkyl group  
14 of the ester is an aliphatic hydrocarbon having from 4 to 8 carbon  
15 atoms; and

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17 (d) an effective amount of a peroxide,

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19 wherein (a), (b), and (c) are separate components or mixed with another of said  
20 components, provided (b) is not mixed with (d), and where said parts by weight are  
21 based upon 100 parts of binder.

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23 2. The binder system of claim 1 wherein the wherein the epoxy resin comprises an  
24 epoxy resin derived from bisphenol A.

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- 3. The binder system of claim 2 wherein the epoxy resin has an epoxide equivalent weight of about 165 to about 225 grams per equivalent.
- 4. The binder system of claim 3 wherein the acrylate is a monomer.
- 5. The binder system of claim 4 wherein the acrylate is trimethylolpropane triacrylate and the peroxide is a hydroperoxide.
- 6. The binder system of claim 5 wherein the hydroperoxide is cumene hydroperoxide.
- 7. The binder system of claim 6 wherein the alkyl ester of a fatty acid is butyl tallate.
- 8. The foundry binder system of claim 7 wherein the amount of epoxy resin is from 40 to 65 weight percent; the amount of multifunctional acrylate is from 5 to 30 weight percent; the amount of butyl tallate is from 5 to 25 weight percent; and the amount of free radical initiator is from 15 to 20 weight percent.
- 9. A foundry mix comprising:
  - (a) a major amount of foundry aggregate;
  - (b) an effective bonding amount of the foundry binder system of claim 1, 2, 3, 4, 5, 6, 7, or 8.
- 10. A cold-box process for preparing a foundry shape comprising:

1           (a)     introducing the foundry mix of claim 9 into a pattern; and

2           (b)     curing with gaseous sulfur dioxide.

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4    11.     A foundry shape prepared in accordance with claim 10.

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6    12.     A process of casting a metal article comprising:

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8           (a)     fabricating an foundry shape in accordance with claim 10;

9           (b)     pouring said metal while in the liquid state into said foundry shape;

10          (c)     allowing said metal to cool and solidify; and

11          (d)     then separating the molded article.

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13   13.     A casting prepared in accordance with claim 12.

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